Synchrotron Crystallography: Beamline X9A Structure-Function Studies

S. Almo, M. Chance, M. Sullivan, A. Tran, and S. Roderick (Albert Einstein College of Medicine) S. Burley, J. Kuryian, S. Darst, and R. MacKinnon (Rockefeller U.) N. Pavletich, D. Nikolov, and J. Goldberg (Sloan-Kettering Institute)

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Specific structural projects that will benefit from beamline X9A, due to weakly diffracting crystals or difficulty in obtaining multiple derivatives, include the accessory proteins regulating eukaryotic RNA polymerase, components of the eukaryotic DNA polymerase system, *E. coli* RNA polymerase, regulation and structure of ion channels, proteins that cross link, bundle and sever actin filaments, SH2 and SH3 modules, phosphatases, cyclin-dependent kinases and acyl carrier protein-dependent acyl transferases. These structural results will have major impact on areas of central importance in cell biology, including eukaryotic and prokaryotic transcriptional control, signal transduction, eukaryotic DNA replication, prokaryotic cell wall biosynthesis, regulation of the actin cytoskeleton, mechanisms of membrane protein function and cell cycle control. These structural results will also directly benefit the programs of our immediate collaborators, and, most importantly will provide the structural foundation that is essential for future work by the large number of biologists working in each of these sub-disciplines.